## In the Claims

- 47. (Previously presented) A pharmaceutical composition comprising:
  - (1) an effective amount of a bioactive compound mediating respiratory depression, muscle rigidity, and/or nausea/vomiting as an unwanted side effect thereof; and
  - (2) a non-polypeptide  $\delta$  receptor activating agent effective for combating said side effect.

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- 48. (Currently amended) The pharmaceutical composition of claim 47, wherein the δ receptor activating agent comprises a diarylmethylpiperazine or a diarylmethylpiperazine diarylmethylpiperdine compound.
- 49. (Previously presented) The pharmaceutical composition of claim 47, wherein the  $\delta$  receptor activating agent comprises a diarylmethylpiperazine compound.
- 50. (Previously presented) The pharmaceutical composition of claim 47, wherein the  $\delta$  receptor activating agent comprises 3290W93.
- 51. (Previously presented) The pharmaceutical composition of claim 47, wherein the  $\delta$  receptor activating agent comprises BW373U86.
- 52. (Previously presented) The pharmaceutical composition of claim 47, wherein the  $\delta$  receptor activating agent comprises an agent selected from the group consisting of:
  - I. diarylmethylpiperazine compounds;
  - II. diarylmethylpiperidine compounds;
  - III. deltorphin I; and
  - IV. deltorphin II.
- $\delta$  (Previously presented) The pharmaceutical composition of claim 47, wherein the δ receptor activating agent comprises an agent selected from the group consisting of:
  - I.  $\delta$  agonist compounds of the formula:

wherein:

Ar is a 5- or 6-member carbocyclic or heterocyclic aromatic ring with atoms selected from the group consisting of carbon, nitrogen, oxygen and sulfur, and having on a first carbon atom thereof a substituent Y and on a second ring carbon thereof a substituent R<sup>1</sup>:

Y is selected from the group consisting of:

hydrogen;

halogen;

C1-C6 alkyl, C2-C6 alkenyl, C2-C6 alkynyl;

C<sub>1</sub>-C<sub>6</sub> haloalkyl;

C<sub>1</sub>-C<sub>6</sub> alkoxy;

C3-C6 cycloalkoxy;

sulfides of the formula  $SR^8$  where  $R^8$  is  $C_1$ - $C_6$  alkyl,  $C_2$ - $C_6$  alkenyl,  $C_2$ - $C_6$  alkynyl,  $C_3$ - $C_6$  cycloalkyl, arylalkyl having a  $C_5$ - $C_{10}$  aryl moiety and an  $C_1$ - $C_6$  alkyl moiety, or  $C_5$ - $C_{10}$  aryl;

sulfoxides of the formula SOR<sup>8</sup> where R<sup>8</sup> is the same as above;

sulfones of the formula  $SO_2R^8$  where  $R^8$  is the same as above;

nitrile;

C<sub>1</sub>-C<sub>6</sub> acyl;

alkoxycarbonylamino (carbamoyl) of the formula  $NHCO_2R^8$  where  $R^8$  is the same as above;

carboxylic acid, or an ester, amide, or salt thereof;

aminomethyl of the formula CH<sub>2</sub>NR<sup>9</sup>R<sup>10</sup> where R<sup>9</sup> and R<sup>10</sup> may be the same or different, and may be hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl, C<sub>2</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> hydroxyalkyl, C<sub>2</sub>-C<sub>6</sub> methoxyalkyl, C<sub>3</sub>-C<sub>6</sub> cycloalkyl, or C<sub>5</sub>-

C<sub>10</sub> aryl, or R<sup>9</sup> and R<sup>10</sup> together may form a ring of 5 or 6 atoms, the ring atoms selected from the group consisting of N and C;

carboxamides of the formula  $CONR^9R^{10}$  where  $R^9$  and  $R^{10}$  are the same as above, or  $C_2$ - $C_{30}$  peptide conjugates thereof; and

sulfonamides of the formula  $SO_2NR^9R^{10}$  where  $R^9$  and  $R^{10}$  are the same as above:

Z is selected from the group consisting of:

hydroxyl, and esters thereof; hydroxymethyl, and esters thereof; and amino, and carboxamides and sulfonamides thereof;

G is carbon or nitrogen;

R<sup>1</sup> is hydrogen, halogen, or C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>2</sub>-C<sub>4</sub> alkenyl, C<sub>1</sub>-C<sub>4</sub> alkynyl;

R<sup>2</sup> is hydrogen, halogen, or C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>2</sub>-C<sub>4</sub> alkenyl, C<sub>1</sub>-C<sub>4</sub> alkynyl;

 $R^3$ ,  $R^4$  and  $R^5$  may be the same or different, and are independently selected from hydrogen and methyl, and wherein at least one of  $R^3$ ,  $R^4$  or  $R^5$  is not hydrogen, subject to the proviso that the total number of methyl groups does not exceed two, or any two of  $R^3$ ,  $R^4$  and  $R^5$  together may form a bridge of 1 to 3 carbon atoms;

R<sup>6</sup> is selected from the group consisting of:

hydrogen;

C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl, C<sub>2</sub>-C<sub>6</sub> alkynyl;

C3-C6 cycloalkyl;

arylalkyl having C5-C10 aryl and C1-C6 alkyl moieties; alkoxyalkyl having C1-C4 alkoxy and C1-C4 alkyl moieties; C2-C4 cyanoalkyl; C2-C4 hydroxyalkyl; aminocarbonylalkyl having a C1-C4 alkyl moiety; and  $R^{12}COR^{13}, \ where \ R^{12} \ is \ C1-C4 \ alkylene, \ and \ R^{13} \ is \ C1-C4 \ alkyl \ or \ C1-C4 \ alkoxy; \ and$ 

R<sup>7</sup> is hydrogen or fluorine,

or a pharmaceutically acceptable ester or salt thereof;

## II. delta agonist compounds of the formula:

$$R_{1}$$
 $R_{2}$ 
 $R_{1}$ 
 $R_{2}$ 
 $R_{1}$ 

in which,

 $R_1$  and  $R_2$ , which can be the same or different, are each hydrogen, linear or branched  $C_{1-6}$  alkyl,  $C_{3-7}$  cycloalkyl,  $C_{3-7}$  cycloalkenyl,  $C_{4-6}$  cycloalkylalkyl,  $C_{3-6}$  alkenyl,  $C_{3-5}$  alkynyl, aryl, aralkyl or furan-2 or 3-yl alkyl or may form together a  $C_{3-7}$  alkyl ring which may be interrupted by oxygen;

 $R_3$  and  $R_4$ , which can be the same or different, are each hydrogen, linear or branched  $C_{1-6}$  alkyl, or  $R_4$  is oxygen forming with the carbon atom to which is attached a C=O group;

R<sub>5</sub> is hydrogen, hydroxy, C<sub>1-3</sub> alkoxy, thiol or alkylthio;

 $R_6$  is phenyl, halogen,  $NH_2$  or a para or meta -C(Z)- $R_8$  group, in which Z is oxygen or sulphur;

 $R_8$  is  $C_{1-8}$ -alkyl,  $C_{1-8}$ -alkoxy or  $NR_9R_{10}$ , wherein  $R_9$  and  $R_{10}$ , which may be the same or different, are hydrogen, straight or branched  $C_{1-6}$  alkyl,  $C_{3-7}$  cycloalkyl,  $C_{4-6}$  cycloalkylalkyl,  $C_{3-6}$  alkenyl, aryl or aralkyl,

$$R_{11} \\$$
 or  $R_6$  is a para or metal -N-C(Z)- $R_{12}$  group

in which  $R_{11}$  and  $R_{12}$  which may the same or different are hydrogen, straight or branched  $C_{1-6}$  alkyl,  $C_{3-7}$  cycloalkyl,  $C_{4-6}$  cycloalkylalkyl,  $C_{3-6}$  alkenyl, aryl, aralkyl or an optionally substituted heterocyclic ring, and Z is as defined above; and,

 $R_7$  is hydrogen, straight or branched  $C_{1\text{--}8}$  alkyl or halogen; and

## III. delta agonist compounds of the formula:

$$R_{6}$$

$$R_{7}$$

$$R_{4}$$

$$R_{2}$$

$$R_{1}$$

in which,

 $R_1$  and  $R_2$ , which can be the same or different, are each hydrogen, linear or branched  $C_{1-6}$  alkyl,  $C_{3-7}$  cycloalkyl,  $C_{3-7}$  cycloalkenyl,  $C_{4-6}$  cycloalkylalkyl,  $C_{3-6}$  alkenyl,  $C_{3-5}$  alkynyl, aryl, aralkyl or furan-2 or 3-yl alkyl or may form together a  $C_{3-7}$  alkyl ring which may be interrupted by oxygen;

 $R_3$  and  $R_4$ , which can be the same or different, are each hydrogen, linear or branched  $C_{1-6}$  alkyl;

R<sub>5</sub> is hydroxy, C<sub>1-6</sub> alkoxy, thiol or alkylthio;

 $R_6$  is a -C(Z)-Rg group, in which Z is oxygen or sulphur,  $R_8$  is  $C_{1-8}$ -alkyl,  $C_{1-8}$ -alkoxy or  $NR_9R_{10}$ , wherein  $R_9$  and  $R_{10}$ , which may be the same or different, are hydrogen, straight or branched  $C_{1-6}$  alkyl,  $C_{3-7}$  cycloalkyl,  $C_{4-6}$  cycloalkylalkyl,  $C_{3-6}$  alkenyl, aryl or aralkyl,

$$R_{11}$$
 | or  $R_6$  is a  $-N$ - $C(Z)$ - $R_{12}$  group

in which  $R_{11}$  and  $R_{12}$  have the same meaning as  $R_9$  and  $R_{10}$  or together form an optionally substituted heterocyclic ring and Z is as defined above, and  $R_7$  is hydrogen, straight or branched  $C_{1-8}$  alkyl or halogen.

- 54. (Previously presented) The pharmaceutical composition of claim 47, in a form suitable for injectable or spinal administration.
- 55. (Previously presented) A pharmaceutical composition comprising:
  - (a) an effective amount of a bioactive compound mediating respiratory depression; and
  - (b) an effective amount of a non-polypeptide  $\delta$  receptor activating agent effective for combating said respiratory depression.

56. (Previously presented) A pharmaceutical composition comprising an effective amount of a bioactive composition mediating respiratory depression, and an effective amount of a compound for reducing, treating or preventing respiratory depression, of the formula:

wherein:

Ar is a 5- or 6-member carbocyclic or heterocyclic aromatic ring with atoms selected from the group consisting of carbon, nitrogen, oxygen and sulfur, and having on a first carbon atom thereof a substituent Y and on a second ring carbon thereof a substituent R<sup>1</sup>:

Y is selected from the group consisting of:

hydrogen;

halogen;

C1-C6 alkyl, C2-C6 alkenyl, C2-C6 alkynyl;

C<sub>1</sub>-C<sub>6</sub> haloalkyl;

C<sub>1</sub>-C<sub>6</sub> alkoxy;

C3-C6 cycloalkoxy;

sulfides of the formula  $SR^8$  where  $R^8$  is  $C_1$ - $C_6$  alkyl,  $C_2$ - $C_6$  alkenyl,  $C_2$ - $C_6$  alkynyl,  $C_3$ - $C_6$  cycloalkyl, arylalkyl having a  $C_5$ - $C_{10}$  aryl moiety and an  $C_1$ - $C_6$  alkyl moiety, or  $C_5$ - $C_{10}$  aryl;

sulfoxides of the formula SOR<sup>8</sup> where R<sup>8</sup> is the same as above;

sulfones of the formula  $SO_2R^8$  where  $R^8$  is the same as above; nitrile;

C<sub>1</sub>-C<sub>6</sub> acyl;

alkoxycarbonylamino (carbamoyl) of the formula NHCO $_2$ R $^8$  where R $^8$  is the same as above;

carboxylic acid, or an ester, amide, or salt thereof;

aminomethyl of the formula  $CH_2NR^9R^{10}$  where  $R^9$  and  $R^{10}$  may be the same or different, and may be hydrogen,  $C_1$ - $C_6$  alkyl,  $C_2$ - $C_6$  alkenyl,  $C_2$ - $C_6$  alkynyl,  $C_2$ - $C_6$  hydroxyalkyl,  $C_2$ - $C_6$  methoxyalkyl,  $C_3$ - $C_6$  cycloalkyl, or  $C_5$ - $C_{10}$  aryl, or  $R^9$  and  $R^{10}$  together may form a ring of 5 or 6 atoms, the ring atoms selected from the group consisting of N and C;

carboxamides of the formula  $CONR^9R^{10}$  where  $R^9$  and  $R^{10}$  are the same as above, or  $C_2$ - $C_{30}$  peptide conjugates thereof; and

sulfonamides of the formula  $SO_2NR^9R^{10}$  where  $R^9$  and  $R^{10}$  are the same as above;

Z is selected from the group consisting of:

hydroxyl, and esters thereof; hydroxymethyl, and esters thereof; and amino, and carboxamides and sulfonamides thereof;

G is carbon or nitrogen;

R<sup>1</sup> is hydrogen, halogen, or C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>2</sub>-C<sub>4</sub> alkenyl, C<sub>1</sub>-C<sub>4</sub> alkynyl;

R<sup>2</sup> is hydrogen, halogen, or C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>2</sub>-C<sub>4</sub> alkenyl, C<sub>1</sub>-C<sub>4</sub> alkynyl;

 $R^3$ ,  $R^4$  and  $R^5$  may be the same or different, and are independently selected from hydrogen and methyl, and wherein at least one of  $R^3$ ,  $R^4$  or  $R^5$  is not hydrogen, subject to the proviso that the total number of methyl groups does not exceed two, or any two of  $R^3$ ,  $R^4$  and  $R^5$  together may form a bridge of 1 to 3 carbon atoms;

R<sup>6</sup> is selected from the group consisting of:
hydrogen;
C1-C6 alkyl, C2-C6 alkenyl, C2-C6 alkynyl;
C3-C6 cycloalkyl;
arylalkyl having C5-C10 aryl and C1-C6 alkyl moieties;
alkoxyalkyl having C1-C4 alkoxy and C1-C4 alkyl moieties;
C2-C4 cyanoalkyl;
C2-C4 hydroxyalkyl;
aminocarbonylalkyl having a C1-C4 alkyl moiety; and
R<sup>12</sup>COR<sup>13</sup>, where R<sup>12</sup> is C1-C4 alkylene, and R<sup>13</sup> is C1-C4 alkyl or C1-C4

alkoxy; and

R<sup>7</sup> is hydrogen or fluorine, or a pharmaceutically acceptable ester or salt thereof.

- 57. (Previously presented) The pharmaceutical composition according to claim 56, wherein Ar is a 6-member carbocyclic aromatic (benzene) ring and R<sup>1</sup> is hydrogen.
- 58. (Previously presented) The pharmaceutical composition according to claim 56, wherein Y is a carboxamide of the formula CONR <sup>9</sup>R <sup>10</sup>.
- 59. (Previously presented) The pharmaceutical composition according to claim 56, wherein  $R^9$  and  $R^{10}$  together form a ring of five or six atoms, thereby forming a pyrrolidinyl or piperidino ring.
- 60. (Previously presented) The pharmaceutical composition according to claim 56, wherein  $R^9$  and  $R^{10}$  are the same or different and are each independently selected from hydrogen,  $C_1$  alkyl and  $C_2$  alkyl.
- 61. (Previously presented) The pharmaceutical composition according to claim 56, wherein Y is hydrogen.

- 62. (Previously presented) The pharmaceutical composition according to claim 56, wherein Y is a sulfone of the formula  $SO_2R^8$  and  $R^8$  is  $C_1$ - $C_6$  alkyl.
- 63. (Previously presented) The pharmaceutical composition according to claim 56, wherein G is N, R<sup>7</sup> and R<sup>2</sup> are each hydrogen, and Z is hydroxyl.
- 64. (Previously presented) The pharmaceutical composition according to claim 56, wherein R<sup>6</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl and C<sub>2</sub>-C<sub>6</sub> alkynyl.
- 65. (Previously presented) The pharmaceutical composition according to claim 56, wherein  $\mathbb{R}^3$ ,  $\mathbb{R}^4$  and  $\mathbb{R}^5$  are hydrogen or methyl, where the total number of methyl groups is one or two.
- 66. (Previously presented) The pharmaceutical composition according to claim 56, wherein  $R^3$  and  $R^5$  are both methyl, and  $R^4$  is hydrogen.
- 67. (Previously presented) The pharmaceutical composition according to claim 47, wherein the  $\delta$  receptor activating agent comprises a compound selected from the group consisting of:
  - (-)-4-(( $\alpha$ R)- $\alpha$ -((2R,5R)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-diethyl-benzamide;
  - (-)-4-(( $\alpha$ R)- $\alpha$ -((2R,5R)-2,5-dimethyl-4-propyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-diethyl-benzamide;
  - $4\hbox{-}((\alpha R)\hbox{-}\alpha\hbox{-}(2S,5S)\hbox{-}4\hbox{-}allyl\hbox{-}2,5\hbox{-}dimethyl\hbox{-}1\hbox{-}piperazinyl)\hbox{-}3\hbox{-}hydroxybenzyl) benzamide;$
  - ( $\pm$ )-3-(( $\alpha$ R\*)- $\alpha$ -((2S\*,5R\*)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)benzamide;

N,N-diethyl-4-(( $\alpha$ R)-3-hydroxy- $\alpha$ -((2R,5R)-2,5-dimethyl-1-piperazinyl)benzyl)benzamide;

 $4-((\alpha R)-\alpha-((2S,5S)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N-ethyl-N-methyl-benzamide;$ 

3-(( $\alpha$ R)-  $\alpha$ -((2S, 5S)-4-allyl-2,5-dimethyl-1-piperazinyl)benzyl)phenol;

( $\pm$ )-N,N-diethyl-4-(( $\alpha$ R\*)-3-hydroxy- $\alpha$ -((2R\*,5S\*)-2,4,5-trimethyl-1-piperazinyl)benzyl)-benzamide;

(+)-4-(( $\alpha$ S)- $\alpha$ -((2S,5S)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-diethyl-benzamide;

3-( $(\alpha R)$ -4-(piperidinocarbonyl)-  $\alpha$ -((2S,5S)-2,4,5-trimethyl-1-piperazinyl)benzyl)phenol;

3-( $(\alpha R)$ -4-(1-pyrrolidinylcarbonyl)- $\alpha$ -((2S,5S)-2,4,5-trimethyl-1-piperazinyl)benzyl)phenol;

( $\pm$ )-3-(( $\alpha$ R\*)- $\alpha$ -((2R\*,5S\*)-4-allyl-2,5-dimethyl-1-piperazinyl)-4-(methylsulfonyl)benzyl)-phenol;

(+)-4-(( $\alpha$ R\*)- $\alpha$ -((2R\*,5S\*)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-dimethylbenzenesulfonamide:

(+)-4-(( $\alpha$ R)- $\alpha$ -((2R,5S)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-dimethylbenzenesulfon-amide; or

(-)-4-(( $\alpha$ R)- $\alpha$ -((2R,5S)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-dimethylbenzenesulfonamide;

( $\pm$ )-3-(( $\alpha$ R\*)- $\alpha$ -((2S\*,5R\*)-4-allyl-2,5-dimethyl-1-piperazinyl)benzyl)phenol;

(±)-4-(( $\alpha$ R\*)- $\alpha$ -((2S\*,5R\*)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxbenzyl)benzamide;

( $\pm$ )-4-(( $\alpha$ R\*)- $\alpha$ -((2R\*,5S\*)-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-diethyl-benzamide;

(+)-cis-4-( $\alpha$ -(4-allyl-3,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-diethylbenzamide;

cis-4-( $\alpha$ -(3,5-dimethyl-4-(methylallyl)-1-piperazinyl)-3-hydroxybenzyl)-N,N-diethylbenzamide;

and pharmaceutically acceptable salts thereof.

- 68. (Previously presented) The pharmaceutical composition of claim 47, wherein the  $\delta$  receptor activating agent comprises
- (-)-4-(( $\alpha$ R)- $\alpha$ -((2R,5R)-4-allyl-2,5-dimethyl-1-piperazinyl)-3-hydroxybenzyl)-N,N-diethylbenzamide or a pharmaceutically acceptable salt thereof.
- 69. (Previously presented) The pharmaceutical composition of claim 47, wherein the bioactive compound comprises an opiate compound.
- 70. (Previously presented) The pharmaceutical composition of claim 47, wherein the bioactive compound comprises an opiate analgesic compound.
- 71. (Previously presented) The pharmaceutical composition of claim 47, wherein the bioactive compound comprises a  $\mu$  opiate compound.
- 72. (Previously presented) The pharmaceutical composition of claim 47, wherein the bioactive compound comprises at least one active ingredient selected from the group consisting of alcohol, aldesleukin, alfentanil, bremazocine, buprenorphine, butorphanol, chloropromazine, clozapine, codeine, dantrolene, diazepam, dihydrocodeine, etorphine, fentanyl, flurazepam, heroin, hydrocodone, hydromorphone, ketamine, larazepam, levallorphen, levorphanol, meperidine, methadone, methohexital, mitomycin, morphine,

nalbuphine, opium, oxazepam, oxycodone, oxymorphone, pentazocine, phenobarbital, porfimer, propoxyphene, resperidone, sufentanil, temazepam, thiopental, thiorzadine, tramadol, trimethaphan, and zolpidem.

- 73. (Previously presented) A pharmaceutical composition comprising:
  - (1) an effective amount of a bioactive compound mediating respiratory depression, muscle rigidity, and/or nausea/vomiting as an unwanted side effect thereof, with the proviso that said bioactive compound is not morphine; and
  - (2) a delta receptor agonist.
- 74. (Currently amended) A pharmaceutical composition comprising:
  - (1) an effective amount of a bioactive compound mediating an unwanted side effect thereof; and
- (2\_3) a non-polypeptide  $\delta$  receptor activating agent effective for combating said side effect.
- 75. (Currently amended) The pharmaceutical composition of claim 74, wherein the δ receptor activating agent comprises a diarylmethylpiperazine or a diarylmethylpiperdine diarylmethylpiperazine compound.